

In the Claims:

Please cancel claims 2, 5, 13, 29, and amend the remaining pending claims as shown, except claim 20.

1. (Currently Amended) A polymersome vesicle comprising a semi-permeable, thin-walled encapsulating membrane, wherein the membrane is formed in an aqueous solution without the use of organic solvent, ~~[and]~~ wherein the membrane comprises one or more wholly synthetic, ~~[non-peptide]~~ super-amphiphilic molecules that are polymeric, having a number average molecular weight ≥ 1400 , wherein at least one super-amphiphile molecule is a block copolymer, and wherein the ~~copolymer~~ polymeric molecules directly self assembles assemble into vesicles due to amphiphilicity and without need for post-assembly polymerization or crosslinking.

2. (Cancelled) The polymersome vesicle of claim 1, wherein at least one super-amphiphile molecule is a block copolymer.

3. (Currently Amended) The polymersome vesicle of claim ~~[2]~~1, wherein the vesicles remain intact upon exposure to (i) organic solvent, (ii) boiling water, or (iii) dehydration in air, or rehydration in aqueous solution.

4. (Currently Amended) The polymersome vesicle of claim ~~[3]~~1, vesicle comprising ~~[a]~~ at least one linear diblock copolymer.

5. (Cancelled) The polymersome vesicle of claim 3, comprising a triblock copolymer.

6. (Currently Amended) The polymersome vesicle of claim ~~[3]~~1 wherein all of the super-amphiphile molecules are block copolymers.

7. (Currently Amended) The polymersome vesicle of claim ~~[3]~~1, wherein the vesicle is prepared together with one or more small amphiphiles.

8. (Currently Amended) ~~[The]~~ A polymersome vesicle ~~[of claim 3 comprising]~~ consisting essentially of a semi-permeable, thin-walled encapsulating membrane, wherein the membrane is formed in an aqueous solution without the use of organic solvent, wherein the membrane comprises one or more wholly synthetic, super-amphiphilic molecules that are polymeric, having a number average molecular weight ≥ 1400 , wherein

at least one super-amphiphile molecule is a block copolymer, wherein the polymeric molecules directly self assemble into vesicles due to amphiphilicity and without need for post-assembly polymerization or crosslinking, wherein the vesicle is prepared together with one or more small amphiphiles, and wherein at least one small amphiphile is a phospholipid.

Claim 9 (Cancelled)

10. (Currently Amended) The polymersome vesicle of claim [3]1, wherein at least one block copolymer is selected from the group consisting of polyethylene oxide (PEO), poly(ethylethylene) (PEE), poly(butadiene) (PB), poly(styrene) (PS) and poly(isoprene) (PI).

Claims 11 and 12 (Cancelled)

13. (Cancelled) The polymersome vesicle of claim 3, wherein the vesicle is biocompatible.

14. (Currently Amended) The polymersome vesicle of claim [3]1, wherein the polymersome encapsulates at least one [material]encapsulatable molecule selected from the group consisting of [drug, therapeutic compound, dye, indicator, waste product, heavy metal,] biocide, nutrient, [sugar, vitamin, mineral,] protein or protein fragment, salt, [electrolyte,] gene or gene fragment, [product of genetic engineering,] and steroid[, adjuvant, biosealant, gas, ferrofluid, and liquid crystal].

15. (Currently Amended) The method of [using] delivering the polymersome vesicle of claim [3]1, wherein the method comprises:

preparing the polymersome vesicle with at least one encapsulatable molecule encapsulated therein [;

importing into the polymersome the at least one encapsulatable material] from the environment immediately surrounding the polymersome; and

[transporting] delivering the polymersome and the at least one [material] encapsulatable molecule encapsulated therein [away from the surrounding environment, thereby removing it from said environment].

16. (Currently Amended) The method of claim 15, [wherein the environment is to a patient, and wherein the method] further [comprises removing the polymersome and]

comprising delivering to a patient the prepared polymersome and the at least one [material] molecule encapsulated therein [from the patient].

17. (Currently Amended) The method of preparing the polymersome of claim [3]15, comprising at least one step consisting of a film rehydrating step, a bulk rehydrating step, or an electroforming step, or any combination thereof.

18. (Currently Amended) A method of controlling the release of an encapsulated [material] molecule from a polymersome of claim [3]1, comprising modulating the composition of the membrane, thereby altering the nature of the encapsulatable [material] molecule that may be transported ~~[to or from the bulk surrounding]~~ by the polymersome.

19. (Currently Amended) A method of controlling the release of an encapsulated [material] molecule from a polymersome of claim 18 by cross-linking a membrane comprising at least one cross-linkable amphiphile and at least one non cross-linkable molecule, and subjecting the thus destabilized membrane to chemical exposure or propagated light, sound, heat, or motion.

20. (Previously Amended) An encapsulating membrane comprising a semi-permeable, thin-walled encapsulating, amphiphilic membrane prepared by forming the membrane around a droplet of oil in a microemulsion of oil dispersed in an aqueous solution, wherein the membrane comprises one or more synthetic super-amphiphilic molecules.

Claims 21 and 22 (Cancelled)

23. (Currently Amended) The method of claim 16, wherein the method further comprises delivering at least one [material] molecule encapsulated ~~[by]~~ in the polymersome to the patient, and wherein the encapsulated [material] molecule is selected from the group consisting of a ~~[drug-]~~therapeutic composition, dye, indicator, nutrient, ~~[sugar, vitamin, mineral,]~~ protein or protein fragment, salt, ~~[electrolyte,]~~gene or gene fragment, ~~[product of genetic engineering,]~~ steroid, ~~[adjuvant, biosealant, waste product, heavy metal,]~~ and gas.

Claim 24 (Cancelled)

25. (Currently Amended) The polymersome vesicle of claim [3]1, comprising a multi-block copolymer.

26. (Currently Amended) The method of [using] delivering the polymersome vesicle of claim [3]15, wherein the method further comprises:

{preparing the polymersome vesicle;
encapsulating therein at least one encapsulatable material;
delivering the polymersome comprising the at least one encapsulated material to a selected environment; and}

releasing said encapsulated [material(s)] molecule(s) into [the] an environment immediately surrounding the polymersome.

27. (Currently Amended) The method of claim 26, wherein the environment is a patient, and wherein the method further comprises delivering the polymersome and the at least one [material] molecule encapsulated therein to the patient, and releasing the encapsulated [material] molecule contained therein.

28. (Currently Amended) The method of claim 27, wherein the method further comprises releasing to the patient the at least one encapsulated [material] molecule, selected from the group consisting of a [drug,] therapeutic composition, [medicament,] dye, indicator, nutrient, [sugar, vitamin, mineral,] protein or protein fragment, salt, [electrolyte,] gene or gene fragment, [product of genetic engineering,] steroid, [adjuvant, biosealant,] and gas.

29. (Cancelled) The method of claim 16, wherein the method further comprises removing from the patient at least one encapsulated material, selected from the group consisting of a waste product, dye, indicator, nutrient, sugar, vitamin, mineral, protein or protein fragment, salt, electrolyte, gene or gene fragment, biosealant and gas.